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ABSTRACT

Assistive technology is equipment that improves the functional capabilities of individuals with disabilities. Using assistive technology, children discover they have control over their environment and develop a sense of competence and independence. As special education enrollments increase, more students are using assistive technology, but many school personnel have little training or technical assistance in assistive technology. The Virginia Department of Education has established eight regional training and technical assistance centers (T-TAC) at colleges and universities to provide a variety of professional training options designed to serve small towns and rural schools. Teachers and therapists meet quarterly at technology support networks to receive training and share ideas and experiences, then return to their schools and train others. A week-long institute developed core evaluation teams consisting of special education teachers, therapists, and psychologists for six school systems. Occasional day-long seminars provide ongoing training. Informal workshops provide instruction on how items can be acquired, adapted, or made at minimal or no cost. Each T-TAC operates a lending library that has curriculum materials, guidebooks, videos, computer software, assistive technology devices, augmentative communication devices, and other technology related items. TAC staff often incorporate an on-site technical assistance visit with delivery of the materials. Suggestions are given on starting and funding similar programs. (TD)

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TEAMS, NETWORKS, AND ASSISTIVE TECHNOLOGY: TRAINING SPECIAL EDUCATORS IN RURAL AREAS

Technology is becoming a more integral part of all our lives. For students with disabilities, technology can help promote mobility, communication, learning, and independence by enhancing abilities and compensating for challenges. Technology can help children with disabilities overcome a common condition called learned helplessness, which is their perception that they do not have control over their environment. Learned helplessness often results in overdependence on adult assistance. Using assistive and adaptive devices, children discover that they can make things happen and therefore they develop a sense of competence and independence (Brett, 1997).

As special education enrollments increase, larger numbers of students in those programs are using assistive technology (AT) to not only meet their basic needs and increase independence but also to improve their successful inclusion into mainstream settings. Because of the rapid growth and change in technology in the past decade, many school personnel have limited or no education in the appropriate use of assistive technology in educational settings. Behrmann (1995) has identified training needs ranging from awareness of assistive technology and methods to access information & services to issues of policy development, funding, evaluation, training in use of devices, and approaches to training consumers.

In order to be beneficial and have maximum effect, teachers and other team members providing services to students with disabilities need to have both pre- and in- service training in screening and assessment, planning, and implementation of assistive technology. Ninety-two percent of the respondents in a national survey of special education teacher preparation programs confirmed a need for technology training (Behrmann, McCallen, & Morrissette, 1992). A national study by Macro International, Inc. and the Office of Special Education Programs indicated one of the major reasons that special educators do not take more advantage of technology is the lack of training and technical assistance ("Technology is Underused in Special Education,"1997). Comprehensive, flexible, and multilevel training systems are needed to ensure that school divisions are prepared to assess the classroom technology needs of their students with disabilities and recommend appropriate assistive devices to meet those needs. In the Macro International/OSEP study, 46.7% of direct service providers believe appropriate training in technology instruction is provided ("Technology is Underused in Special Education,"1997). A study by Behrmann, Morrissette, & McCallen (1992) indicated that 84.3% of Virginia school

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district administrators believed it important to have trained personnel who can identify assistive technology needs in their school systems.

In addition to developing student independence through the use of AT, appropriate training for staff is essential in order to limit the growing phenomenon known as "technology abandonment" (adopting and then abandoning assistive devices due to lack of training in its proper use). According to Behrmann (1995) there is a strong need for service providers to be familiar with the available technology and to be well trained in the uses, adaptations, and practices of technology for person with disabilities. Training that is responsive to the unique needs of school divisions and that provides teachers with methods to integrate technology into the curriculum will develop school-based expertise and ultimately provide needed services to students. In rural areas, creativity and resourcefulness often abound. However, school systems still face numerous challenges, including limited finances, few related services personnel, and lack of access to training and/or evaluation centers. Assistive technology devices and services provided by local school systems can vary widely. The trained and experienced personnel (especially in specialized fields of practice) who are available are frequently stretched to their limits as they try to maintain contact with numerous sites. Depending on the resources of the school system, other technical support may be very limited, such as computer availability but lack of teacher training, limited inservice trainers with technology expertise, and/or insufficient funds for purchasing assistive technology devices.

Providing a grass-roots technology training system is one proven example of serving the diverse needs of teachers and related service personnel in Virginia. An array of functional training options designed to enable education personnel to learn about the use of assistive technology in the school setting has proven to be an effective means of taking technology to the schools. Training has been available on a variety of levels, from awareness to expert, including technology support networks & train the trainer programs, system wide AT team training, hands-on low-tech seminars, and lending libraries. In some instances the training sessions have been open to all personnel in the service region. The goal, however, of the team training and train-the-trainer activities has been to provide intensive training to a core group of individuals in a long-term, consistent manner rather than through one time only workshops. All the above mentioned methods are used to increase direct service providers' knowledge and skill level in the daily use of assistive technology in the classroom. By targeting general education teachers in inclusive settings, special education teachers, and related service providers, those who are providing the direct services to the students requiring and using the technology are the beneficiaries of the much needed training and technical assistance.

The training and technical assistance centers (T-TAC) are projects of the Virginia Department of Education funded by state and federal IDEA monies. T-TACs are located at colleges and universities in the eight regions of Virginia, affording every school system equal access to services. T-TACs are are one of the major statewide efforts for the training of professionals serving children and youth with disabilities with services including on-site and off-site consultations, small group and regional workshops, information searches, newsletters, and lending libraries. While the T-TACs provide services encompassing all ranges and types of disabilities, one of the most frequent content area requests has consistently been in the area of

assistive technology. Based on the increasing demands, the T-TACs have hired technology specialists who can assist professionals in developing skills that are directly related to the needs of their students. While there is a cohesiveness of services between the eight T-TACs, each office has also developed and maintains distinctive features appropriate for its service region. The networks and team training described in this paper have been designed for an office serving small cities, towns, and rural school systems to train their personnel to become the local "experts" or resources for their systems while increasing the capacity for service delivery in each locality. The training options provided have been successfully implemented in rural school divisions in central and southwestern Virginia.

As with any curriculum knowledge base, not all individuals are expected to be experts in every area. Similarly, no one person is usually experienced in all AT systems or devices. Technology support networks had their origin when interest in technology was in its early stages and few resources were available for the personnel interested in using such technology. In order to educate a larger population on the use of specific AT equipment, a train the trainer system was developed whereby skilled AT educators shared their knowledge and experiences with a select group of professionals. The first TAC sponsored technology network was started in rural southwest Virginia in 1989. Teachers and therapists from local school systems met quarterly on Saturdays at various sites throughout the region to receive training, share ideas, resources, successes, and discuss challenges. Through these gatherings professionals identified their own specific skills and competencies, determined the skills they would like to develop, and decided on future training needs. During the summers TAC sponsored a 3 day technology institute that involved training at beginning, intermediate, and advanced levels for network members. Vendors would attend to demonstrate the latest technology innnovations and offer training sessions; they have proven to be invaluable in providing technical support and resources. Personnel were given training in specific applications (ex., Boardmaker) or devices (ex., WhisperWolf) until they were skilled in its use. In return, these individuals became trainers to teach the appropriate use of the software or devices to others. As a result of this "Train the Trainer" approach, individuals who were skilled in a specific computer application, adapted device, or programming needs became resources for others. Participants returned to their home school systems to be resources or "troubleshooters" for other personnel. In some instances, trainers have been given release time or professional leave to visit a school (or school system) not their own. In instances when the trainer was not granted leave, the T-TAC has been able to reimburse the school system for substitutes if necessary. This was a cost effective means of training a small group of professionals with far reaching implications for training at the local level. Additionally, requests for low-tech assistive technology diminished at the TAC office and the pool of consultants increased as a result of this network.

Creation of system-wide evaluation teams developed from the need for localities to have personnel readily available to assess students for the appropriate use of assistive technology. Co-sponsored by the T-TAC, a regional consortium of school systems, and two other state projects, the initial week long training institute held during the summer of 1997 was established for six school systems. Each of the six systems identified a core team to become responsible for and knowledgeable about AT evaluation. Team members included speech therapists, special education teachers, occupational and physical therapists, and a school psychologist; a special

education administrator oversees the AT team operations in each locality. Recertification points or the option of enrolling in a three credit graduate course with reduced tuition rates were offered to institute participants. Throughout the school year the teams have been provided ongoing training via several day long seminars in order to further develop their expertise. The collaboration between the sponsoring agencies and school systems participants has helped to strengthen each team's expertise and enhance capacity building in each locality. Another week long training institute is scheduled for the summer of 1998. This model of training is easily adaptable to local needs; current plans are for the initial team training to be replicated during the summer as another group of school systems will establish AT evaluation teams and also to be replicated in another region of Virginia.

Assistive technology devices range on a continuum from low-tech to high-tech, from adapted pencils & spoons, battery operated toys, and picture communication boards to powered wheelchairs and voice output computers. The Individuals with Disabilities Education Act (IDEA) defines an "assistive technology device" as any item, piece of equipment, or product system whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities. (20 U.S.C. 1401[25]). A research study by the Job Accommodation Network reported that the majority of assistive technology devices are not unreasonably expensive; that is, 69% of devices or accommodations cost less than $500 and 50% cost less than $50 (Behrman, 1995). Based on the definition in IDEA, there are a myriad of items that teachers and therapists are already using in classrooms that could be considered low-tech AT devices. There are also many items that can be acquired or adapted at minimal or no cost which led to the creation of hands-on low-tech "make it, take it" seminars. At these sessions, participants are provided guided instruction on creating switches, augmentative communcation boards & overlays, and battery interrupters; adapting toys, books, and writing materials; and developing modified curricular activities. Sessions are often held after school at a central location for 2 to 3 hours. Materials are provided by the participants, workshop sponsors, and donations. Participants are provided print and verbal instruction along with demonstrations by the workshop leaders and are able to make what is appropriate for their setting. These informal workshops are held several times during the school year with some of the activities being repeated throughout the year (ex., switch making).

Special education teachers have reported they do not have access to appropriate computer software ("Technology is Underused in Special Education,"1997). Lending libraries are operated by all the T-TACs in Virginia. Although operating procedures vary from office to office, all have similar resources. Included in the lending libraries are curriculum materials and guidebooks, assessment instruments, resource books and videos on the topics of disabilities, families, integrating programming, policy and legal issues, program design, and other topics related to special education. Each library has an extensive collection of computer software, assistive technology devices, augmentative communication devices, adapted toys, and other technology related items. A new "product" of the libraries is technology bundles--comprehensive packages of compatible items (ex., IntelliKeys with appropriate overlays and software) or a variety of items (ex., an assortment of switches). These bundles enable a teacher or therapist to utilize a set of materials at one time to determine appropriateness with a student rather than try materials in a more random fashion. Each T-TAC maintains an annotated bibliography of resources, hard copy

and disk, which are available to personnel in the field. Materials are loaned to personnel in the respective regions, and sometimes across regions, for several weeks. The items are accessible by visiting the library, by mail, or in some instances, are personnally delivered by T-TAC staff. With the technology related materials, TAC staff often incorporate an on-site technical assistance visit with delivery of the materials in order to determine appropriateness of the materials for the student/class in question or to provide assistance in appropriate use of the materials to the teacher requesting the items.

While the technology networks, team training, workshops, and lending resource library reviewed in this paper had their origins in a university based training system and had grant funding from the state department of education, school division personnel have assumed responsibility for some services. Initial start-up costs may at first appear to be unmanageable; however, by merging resources of existing programs and/or by securing grants or funding from sources such as civic organizations, private corporations, and advocacy groups, the programs are workable. A major expense is the purchase of computers, assistive technology equipment, and augmentative communication devices. Securing a central location to house the materials and identifying personnel to coordinate services and manage the lending library could be decided and costs shared by participating programs. Other costs to consider are distribution, return, and repair and updating of resources.

In providing training sessions, program personnel need to identify and address the skills and competencies of the individuals who will be involved as participants. Recipients of the training must be included in the planning process in order to identify and plan the most effective services. Costs may be incurred by bringing in outside consultants and trainers. However, often times there are "experts" within systems waiting for the opportunity to share their expertise. Other resources for training include personnel from hospitals, state departments of education and vocational rehabilitation, local private agencies and organizations, and parents. Also, much technical assistance is available from the companies which manufacture and sell software, assistive technology, and augmentative communication devices (Edmark, Mayer Johnson, AbleNet, etc.). With dedicated and involved personnel, committed resources, and time, all the training options which have been presented can be implemented and repliced in a variety of settings.

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